

**Practice: 449 - Irrigation Water Management****Scenario: #1 - Basic IWM 30 acres or less****Scenario Description:**

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

**After Situation:**

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure:** Irrigated Area Managed

**Scenario Unit:** Acre

**Scenario Typical Size:** 30

**Scenario Cost:** \$828.40

**Scenario Cost/Unit:** \$27.61

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	20	\$828.40

**Practice: 449 - Irrigation Water Management****Scenario: #2 - Basic IWM over 30 acres****Scenario Description:**

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 50 acre corn field with a sprinkler irrigation system.

**After Situation:**

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 50

**Scenario Cost:** \$743.88

**Scenario Cost/Unit:** \$14.88

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4	\$81.16
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	16	\$662.72

**Practice: 449 - Irrigation Water Management****Scenario: #3 - Annual Crops, Vegetables, 1st Year****Scenario Description:**

This practice includes the installation of soil moisture sensors such as tensiometers, gyp blocks, capacitance sensors etc, that are installed and read to determine point in time soil moisture by depth; and the labor of using the equipment over a 12-week growing season for the first year. The installation includes the purchase of soil moisture meters and sensors, installation equipment, and labor to install and utilize sensors and readings in making IWM decisions during first year. Typical Scenario involves installation of resistance sensor blocks in a 20 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors and manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 12-week growing season. Meters used to read sensors may be portable. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre annual crops with sprinkler or micro irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$1,215.55

**Scenario Cost/Unit:** \$60.78

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	16	\$324.64
<b>Materials</b>						
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96
Soil Moisture Meter	1455	Soil Moisture Sensor Reader. Equipment only.	Each	\$266.09	1	\$266.09
<b>Mobilization</b>						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$78.25	2	\$156.50

**Practice: 449 - Irrigation Water Management****Scenario: #4 - Annual Crops, Vegetables, 1st Year, with Data Logger****Scenario Description:**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. The installation includes the purchase of soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. Scenario also includes the labor associated with using the equipment and readings in making IWM decisions over a 12-week growing season for the first year. Typical Scenario involves installation of resistance sensor blocks in a 20 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors and manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 12-week growing season. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre annual crops with sprinkler or micro irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer periodically downloads continuously recorded soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$2,051.02

**Scenario Cost/Unit:** \$102.55

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	16	\$324.64
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
<b>Materials</b>						
Data Logger	1453	Data Logger W/Graphic Output for water management. Materials only.	Each	\$550.78	2	\$1,101.56
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96
<b>Mobilization</b>						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$78.25	2	\$156.50

**Practice: 449 - Irrigation Water Management****Scenario: #5 - Annual Crops, Vegetables, 2nd and 3rd Year****Scenario Description:**

A system to monitor irrigation water applied to field crops over a 12-week growing season. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Subscription to real-time weather records and rainfall record keeping is used. The producer must manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded). Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre annual crops with sprinkler or micro irrigation.

**After Situation:**

Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure:** Irrigated Area Managed

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$656.00

**Scenario Cost/Unit:** \$32.80

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	16	\$324.64

**Practice: 449 - Irrigation Water Management****Scenario: #6 - Perennial Crops, Orchards, 1st Year****Scenario Description:**

This practice includes the installation of soil moisture sensors such as tensiometers, gyp blocks, capacitance sensors etc, that are installed and read to determine point in time soil moisture by depth; and the labor of using the equipment over a 26-week growing season for the first year. The installation includes the purchase of soil moisture meters and sensors, installation equipment, and labor to install and utilize sensors and readings in making IWM decisions during first year. Typical Scenario involves installation of resistance sensor blocks in a 20 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors and manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 26-week growing season. Meters used to read sensors may be portable. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre perennial crops with sprinkler or micro irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$1,418.45

**Scenario Cost/Unit:** \$70.92

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	26	\$527.54
<b>Materials</b>						
Soil Moisture Meter	1455	Soil Moisture Sensor Reader. Equipment only.	Each	\$266.09	1	\$266.09
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96
<b>Mobilization</b>						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$78.25	2	\$156.50

**Practice: 449 - Irrigation Water Management****Scenario: #7 - Perennial Crops, Orchards, 1st Year, with Data Logger****Scenario Description:**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. The installation includes the purchase of soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. Scenario also includes the labor associated with using the equipment and readings in making IWM decisions over a 26-week growing season for the first year. Typical Scenario involves installation of resistance sensor blocks in a 20 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors and manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 26-week growing season. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre perennial crops with sprinkler or micro irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer periodically downloads continuously recorded soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure:**

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$2,253.92

**Scenario Cost/Unit:** \$112.70

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	26	\$527.54
<b>Materials</b>						
Data Logger	1453	Data Logger W/Graphic Output for water management. Materials only.	Each	\$550.78	2	\$1,101.56
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96
<b>Mobilization</b>						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	\$78.25	2	\$156.50

**Practice: 449 - Irrigation Water Management****Scenario: #8 - Perennial Crops, Orchards, 2nd and 3rd Year****Scenario Description:**

A system to monitor irrigation water applied to specialty crops over a 26-week growing season. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 10 acres. Subscription to real-time weather records and rainfall record keeping is used. The producer must manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded). Record keeping involves a weekly analysis, monthly documentation and a year-end report.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 20 acre perennial crops with sprinkler or micro irrigation.

**After Situation:**

Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 20

**Scenario Cost:** \$858.90

**Scenario Cost/Unit:** \$42.95

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	26	\$527.54
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36

**Practice: 449 - Irrigation Water Management****Scenario: #9 - Field Crops, Grains, 1st Year****Scenario Description:**

This practice includes the installation of soil moisture sensors such as tensiometers, gyp blocks, capacitance sensors etc, that are installed and read to determine point in time soil moisture by depth; and the labor of using the equipment over a 19-week growing season for the first year. The installation includes the purchase of soil moisture meters and sensors, installation equipment, and labor to install and utilize sensors and readings in making IWM decisions during first year. Typical Scenario involves installation of resistance sensor blocks in a 50 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors and manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 19-week growing season. Meters used to read sensors may be portable. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 25 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate his field crops (ex: corn, soybeans, wheat) based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 50 acre corn field with sprinkler irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 50

**Scenario Cost:** \$830.79

**Scenario Cost/Unit:** \$16.62

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4.75	\$96.38
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
<b>Materials</b>						
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96
Soil Moisture Meter	1455	Soil Moisture Sensor Reader. Equipment only.	Each	\$266.09	1	\$266.09

**Practice: 449 - Irrigation Water Management****Scenario: #10 - Field Crops, Grains, 1st Year, with Data Logger****Scenario Description:**

This practice includes the installation of soil moisture sensors such as tensiometers, gyp blocks, capacitance sensors etc, that are installed and read to determine point in time soil moisture by depth; and the labor of using the equipment over a 19-week growing season for the first year. The installation includes the purchase of soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. Scenario also includes the labor associated with using the equipment and readings in making IWM decisions over a 19-week growing season for the first year. Typical Scenario involves installation of resistance sensor blocks in a 50 acre field of irrigated cropland. Producer periodically monitors data to manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded) during the 19-week growing season. Meters used to read sensors may be portable. Subscription to real-time weather records and rainfall record keeping is used. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 25 acres. Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate his field crops (ex: corn, soybeans, wheat) based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 50 acre corn field with sprinkler irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Area Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 50

**Scenario Cost:** \$1,666.26

**Scenario Cost/Unit:** \$33.33

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4.75	\$96.38
<b>Materials</b>						
Data Logger	1453	Data Logger W/Graphic Output for water management. Materials only.	Each	\$550.78	2	\$1,101.56
Soil Moisture Sensor	1456	Soil moisture resistance sensor W/10' cables. Equipment only.	Each	\$34.24	4	\$136.96

**Practice: 449 - Irrigation Water Management****Scenario: #11 - Field Crops, Grains, 2nd and 3rd Year****Scenario Description:**

A system to monitor irrigation water applied to field crops over a 19-week growing season. Soil moisture data is reviewed 3 times per week at each sensor site (two sensors per site) with one sensor site per 25 acres. Subscription to real-time weather records and rainfall record keeping is used. The producer must manually turn on and off the water supply in accordance with the soil moisture readings and keep records for each irrigation cycle (run time, inches applied, and total flow recorded). Record keeping involves a weekly analysis, monthly documentation, and a year-end report.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

**Before Situation:**

The farmer decides when to irrigate his field crops (ex: corn, soybeans, wheat) based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success.

The typical irrigated field is a 50 acre corn field with sprinkler irrigation.

**After Situation:**

Producer has installed 2 sensors at each monitoring site at different depths. Producer uses periodic soil moisture measurements to schedule irrigation more effectively resulting in improved irrigation water management and reduced energy use. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

**Scenario Feature Measure: Irrigated Are Managed**

**Scenario Unit:** Acre

**Scenario Typical Size:** 50

**Scenario Cost:** \$427.74

**Scenario Cost/Unit:** \$8.55

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$20.29	4.75	\$96.38
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$41.42	8	\$331.36